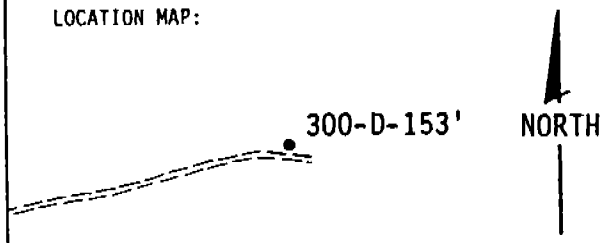
LITHOLOGIC LOG

LOCATION MAP:



SW 1/4 SW 1/4 NE 1/4 NE 1/4 S 36 T 20S R 3E

SITE ID: NASA-WSTF LOCATION ID: 300-D-153

SITE COORDINATES (ft.):

N 231987.23 E 422914.50

GROUND ELEVATION (ft. MSL): 5108.71 (BRASS CAP)

STATE: NEW MEXICO COUNTY: DOÑA ANA

DRILLING METHOD: MUD/AIR-FOAM ROTARY

DRILLING CONTR.: LARJON

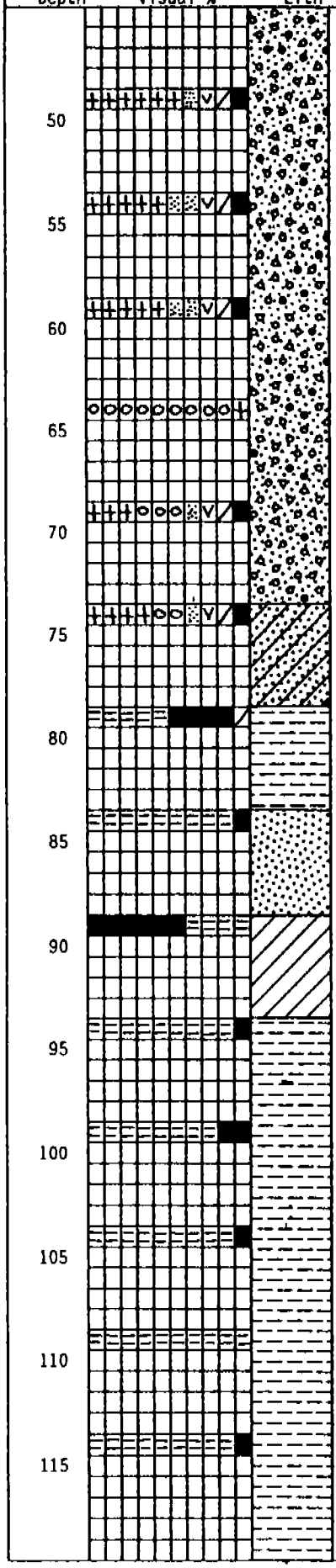
DATE STARTED: 25 MARCH 1988 DATE COMPLETED: 4 APRIL 1988

FIELD REP.: J. KASZUBA, R. COOPER, E. MORSE, P. EGAN

COMMENTS: 12 1/4" bit w/mud 0'-52'. 7 7/8" bit 52'-185'. 3 3/4" core barrel 185'-194'. Bedrock at 75'. Total depth = 194'.

LOCATION DESCRIPTION:

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description	
5 10 15 20 25 30 35 40 45 50			0'-52' not available	0'-185' cuttings	0'-75'	ALLUVIUM (Santa Fe Group): Sample ranges from dark yellowish orange (10YR 6/6) to pale brown (5YR 5/2); cuttings range in diameter from <0.1 inches to 0.5 inches, average diameter is 0.2 inches; angular to subangular; poorly sorted. Consolidated (?) alluvium comprised of conglomerate containing silts through boulders. Caliche horizon at 60'-65'. Lithology of cuttings: dark gray (N3) limestone, moderate reddish brown (10R 4/6) siltstone, moderate orange pink (10R 7/4) sandstone, very light gray (N8) rhyolite, medium light gray (N6) chert and white (N9) quartz.
					20'-30'	Average diameter of cuttings decreases from 0.2 to 0.1 inches.
					30'-45'	Average diameter of cuttings increases to 0.2 inches.



Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
		50'-60' Average diameter of cuttings increases to 0.4 inches.
		52'-60' Cuttings of cement (grouting of surface casing) mixed with sample.
begin drillograph 4.5		
5.5		60'-65' Caliche horizon. Caliche cuttings range in color from light brown (5YR 6/4) to grayish orange pink (5YR 7/2). Caliche cuttings range from <0.1 to 0.75 inches in diameter, average 0.25 inches; angular to rounded; poorly sorted. Caliche horizon comprised of a caliche matrix (cement) containing angular fragments (<0.1 inches in diameter) of all lithologies noted in alluvium.
11.5		
19		65'-75' Conglomerate as above. Average cutting diameter is 0.25 inches.
36		75'-149' INTERBEDDED SANDSTONE AND SHALE (Panther Seep Formation): Sample is grayish brown (5YR 3/2) to grayish orange (10YR 7/4); cuttings range from 0.1 to 0.8 inches in diameter, average 0.25 inches; angular to subangular; poorly sorted. Consolidated, interbedded sandstone and shale. Color of the sandstone ranges from grayish brown (5YR 3/2) to moderate brown (5YR 3/4). Sandstone contains very fine-grained, rounded, well-sorted quartz sand. The sandstone is strongly effervescent (calcite cement) and displays no sedimentary structures. Sandstone intervals containing calcite-filled fractures noted below. Color of the shale ranges from moderate brown (5YR 3/4) to dark yellowish orange (10YR 6/6). The shale is very finely-laminated, fissile and effervescent. Subdivision of sandstone and shale described below. Clay interval at 90'-95'. Cuttings of moderate reddish brown (10R 4/6) siltstone occur at 75'-80'.
6.5		
15		
25		
2.5		
2.5		75'-80' Clay-rich sandstone interval (erosional surface ?).
		80'-85' Shale interval (shale represented by clay symbol in visual % column).
		85'-90' Sandstone interval.
5.5		90'-95' Clay, dark yellowish orange (10YR 6/6).
		95'-120' Shale interval (shale represented by clay symbol in visual % column). Shale fissile but not laminated.
2.5		
3.5		

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Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description	
115			3.5			
120			3.5		120'-130'	Sandstone interval. Fractures filled with calcite present.
125			20.5			
130			36		130'-149'	Shale interval (shale represented by clay symbol in visual % column). Shale fissile but not laminated.
135			6			
140			4.5			
145			3			
150			9.5		149'-185.5'	LIMESTONE (Panther Seep Formation): Sample is dark gray (N3) to grayish black (N2) in color; limestone cuttings are < 0.1 to 0.6 inches in diameter, average diameters noted below; angular to subangular; poorly sorted. Limestone is micritic and fissile. Calcite-filled fractures occur at specific intervals as noted below.
155			13		149'-155'	Calcite-filled fractures present. Cuttings range from ≤ 0.1 to 0.6 inches in diameter.
160			12.5		155'-160'	Average diameter of cuttings is < 0.1 inches.
165			3.5		160'-185'	Average diameter of cuttings is 0.2 inches.
170			5		170'-180'	Calcite-filled fractures present.
175			14.5			
180			18			

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Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
180			18		
185			5.5	185'-194' core	185'-194' ***** core interval ***** See attached description.
					185.5'-194' SHALE (Panther Seep Formation): See attached core description.
190			89.5		
					Total depth = 194'.
195			7		
200					
205					
210					
215					
220					
225					
230					
235					
240					
245					